



Tennessee River

A Shared Resource
for Valley States

Chuck Bohac

River Operations



2005 WATER USE UPDATE

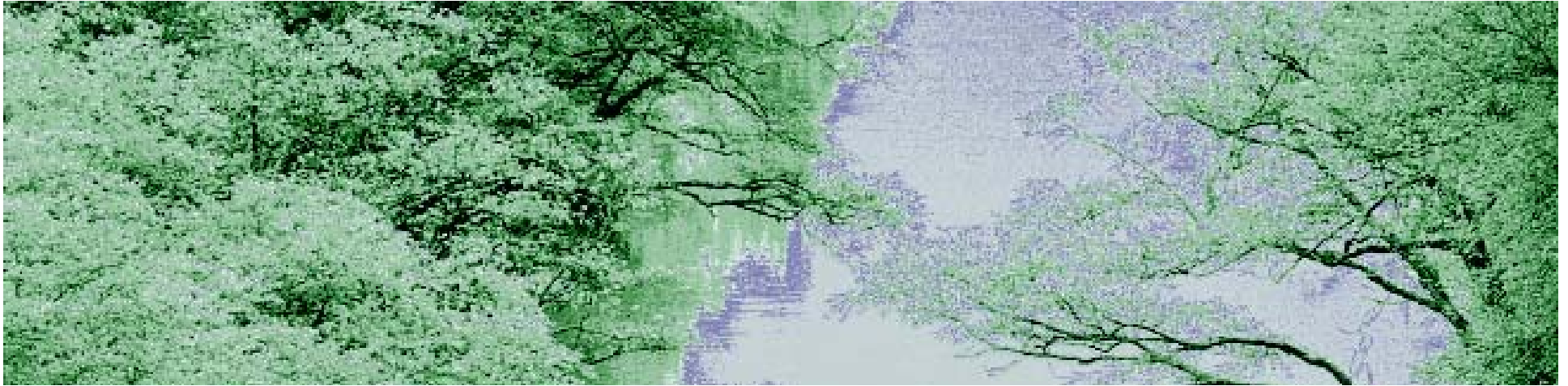


Estimated Use of Water in the Tennessee River Watershed in 2000 and Projections of Water Use to 2030

U.S. Geological Survey, Water-Resources Investigations Report 03-4302
by Susan S. Hutson, M. Carolyn Koroa, and C. Michael Murphree

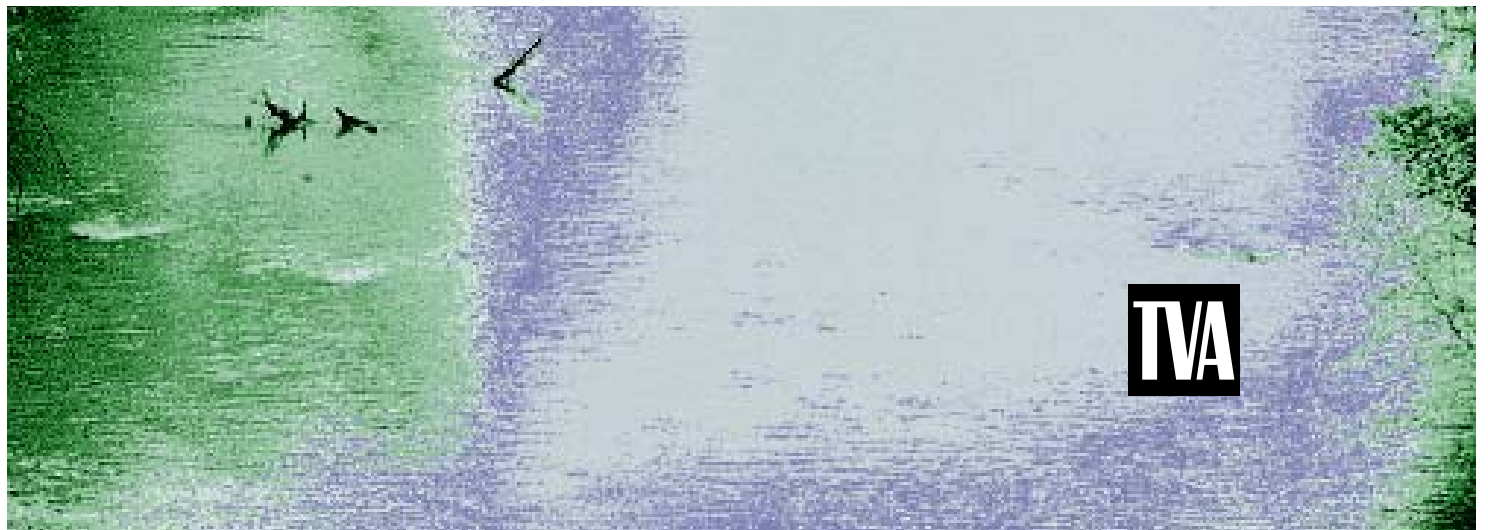
Prepared in cooperation with the [Tennessee Valley Authority](#)

This report is available as a [pdf](#) below



Tennessee Valley

Water-Supply Inventory & Needs Analysis



This map illustrates the Tennessee River System and its watershed, which spans across Tennessee, Kentucky, Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, and Missouri. The river system is depicted in blue, showing its extensive network of tributaries. Major cities are marked with red dots, including Nashville, Knoxville, Chattanooga, and Memphis. Dams are indicated by black rectangles, such as the Norris, Watts Bar, and Chickamauga dams. The map also shows the Mississippi River to the west and the Ohio River to the north. A legend in the bottom right corner identifies the symbols used for the river system, dams, and metropolitan areas. The text '* Tapoco' is located at the bottom right of the page.

Areas

State	State Percent of Watershed	Watershed Percent of State
Alabama	17	13
Georgia	4	2
Kentucky	2	2
Mississippi	1	1
North Carolina	13	10
Tennessee	55	54
Virginia	8	8

DATA

Withdrawal

- Public Supply and Industrial – Provided by State Agencies, USGS, and TVA
- Thermoelectric – TVA
- Irrigation – US Department of Agriculture provided irrigated acreage and the USGS estimated the withdrawal

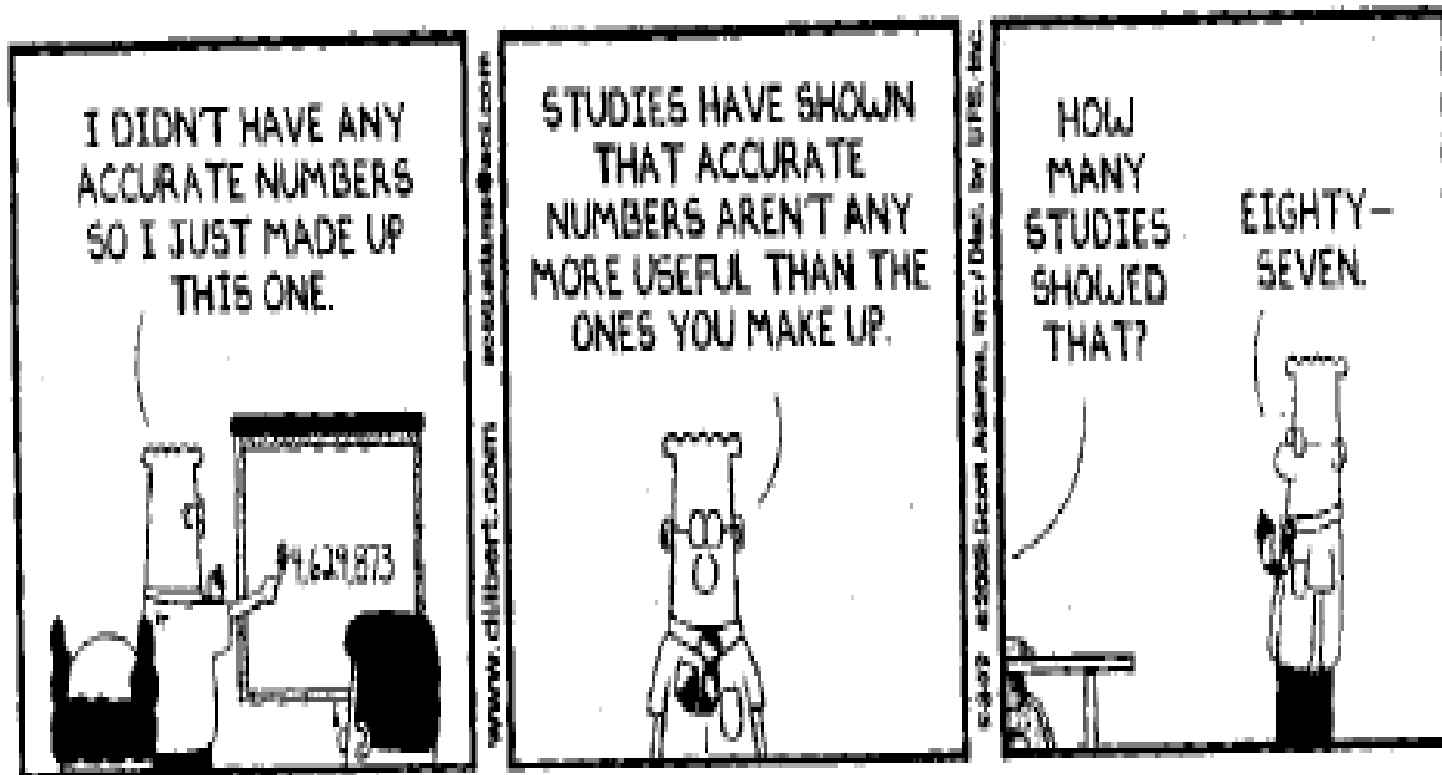
MORE DATA

Return Flow

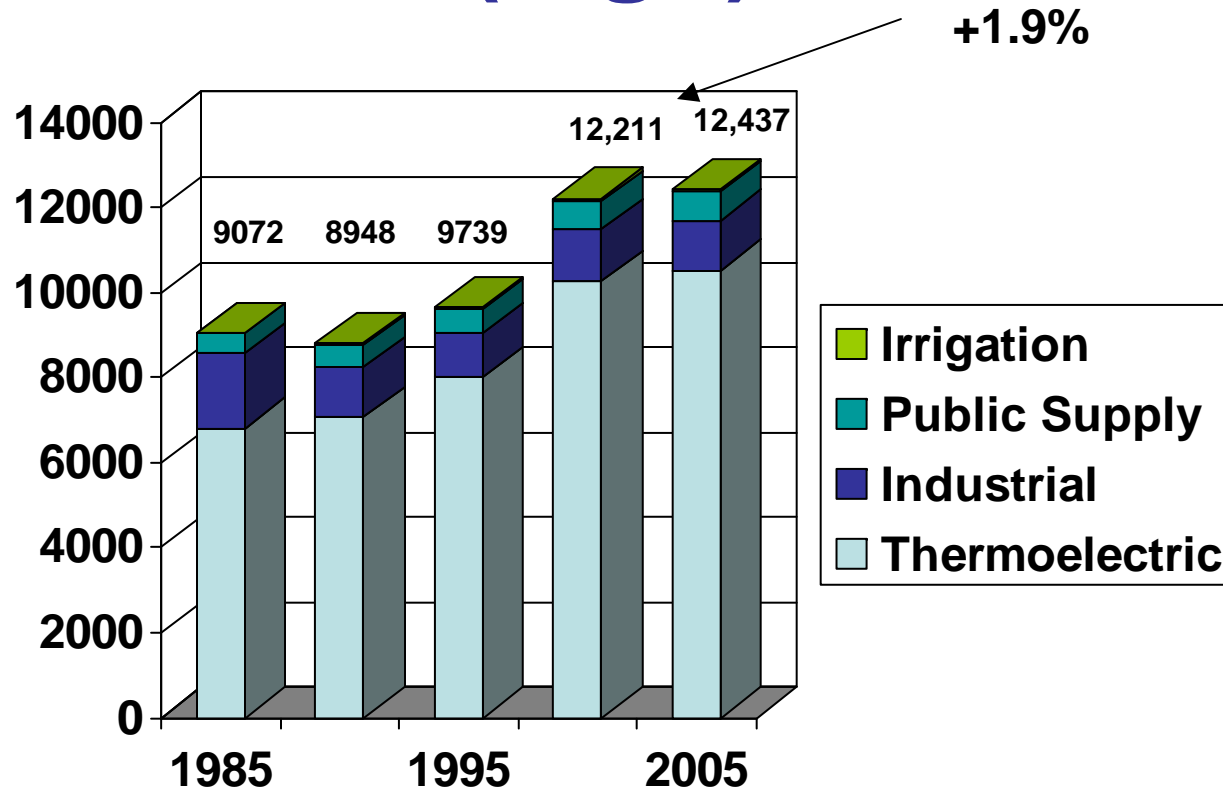
- Public Supply and Industrial – US EPA and States
- Thermoelectric – US EPA and TVA

MISSING DATA?

DILBERT: BY SCOTT ADAMS



WITHDRAWALS 1985 TO 2005 (mgd)

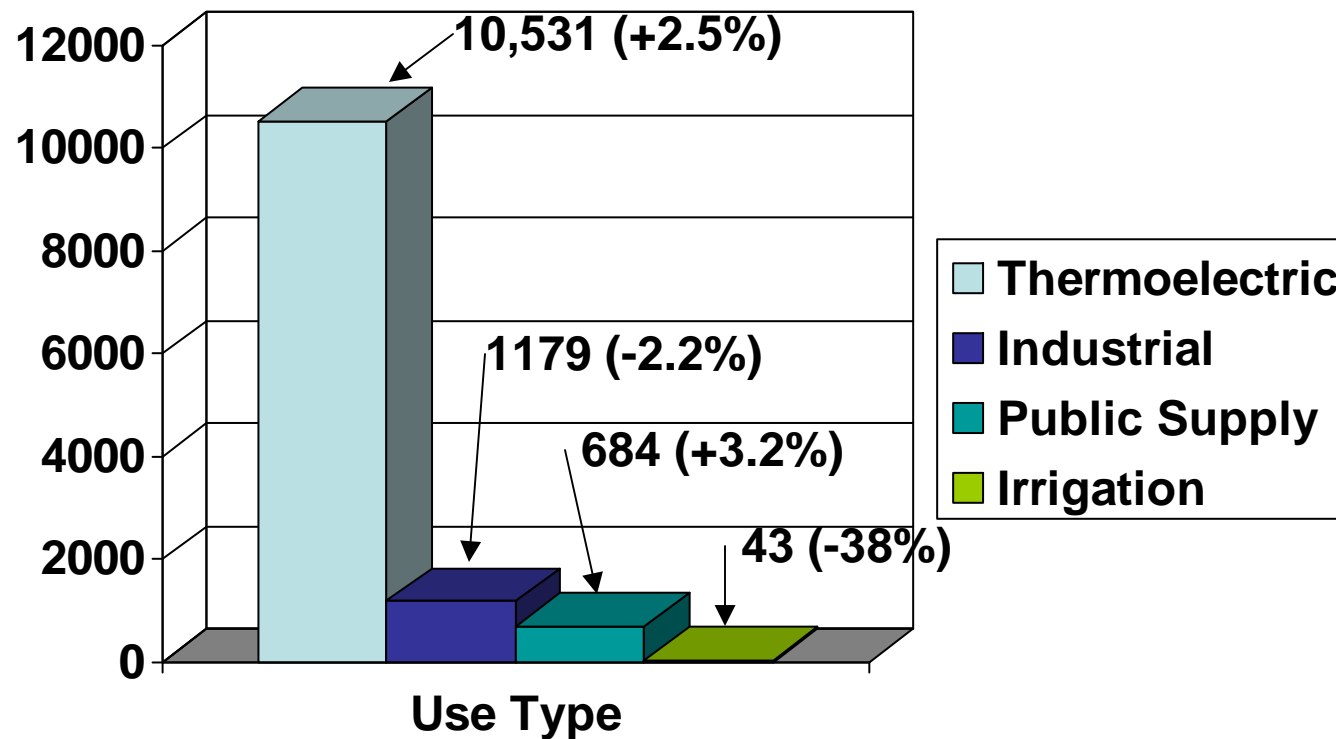






2005 ESTIMATED WATER USE

Withdrawal in millions of gallons per day (mgd)



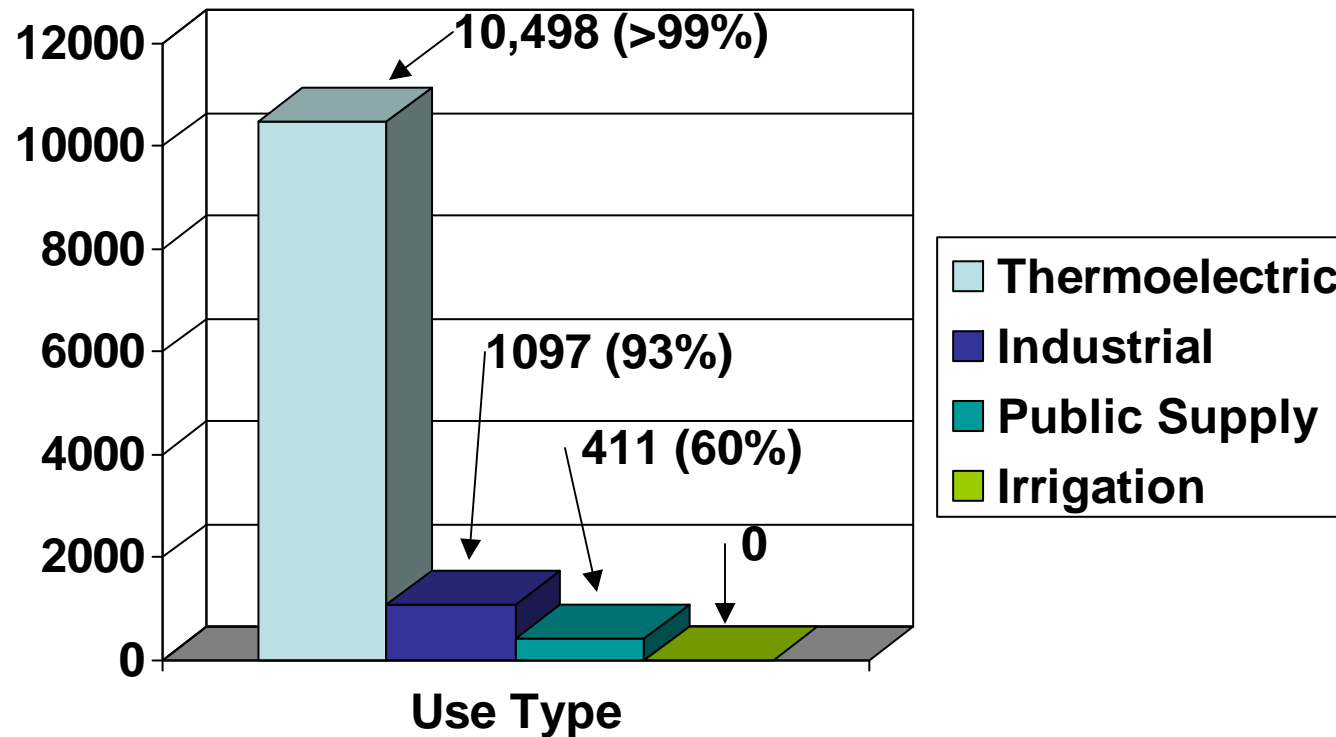
Results by Use

Percentage of Total Withdrawals

	1995	2000	2005
Thermoelectric	83	84	85
Industry	11	10	9.5
Public Supply	6	5	5.5
Irrigation	1	1	<1

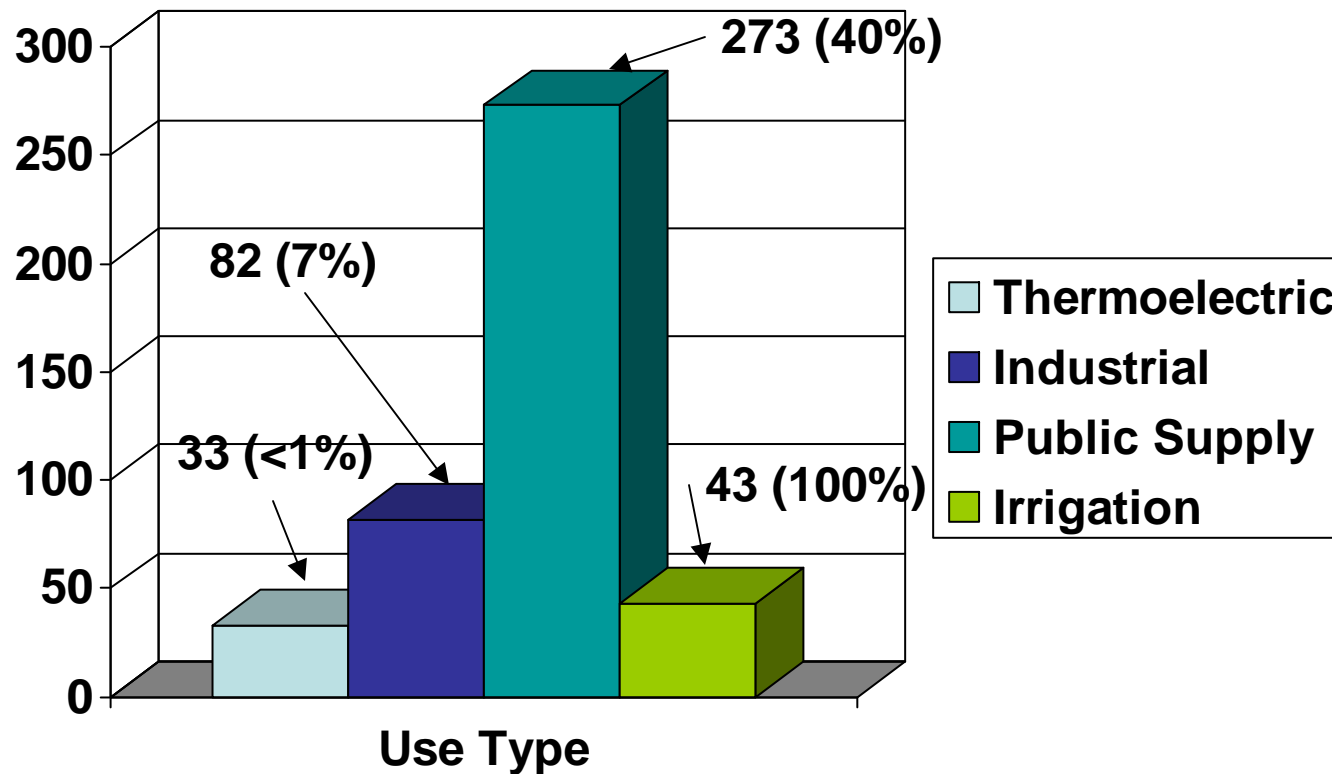
2005 ESTIMATED WATER USE

Return Flow in millions of gallons per day
(mgd)



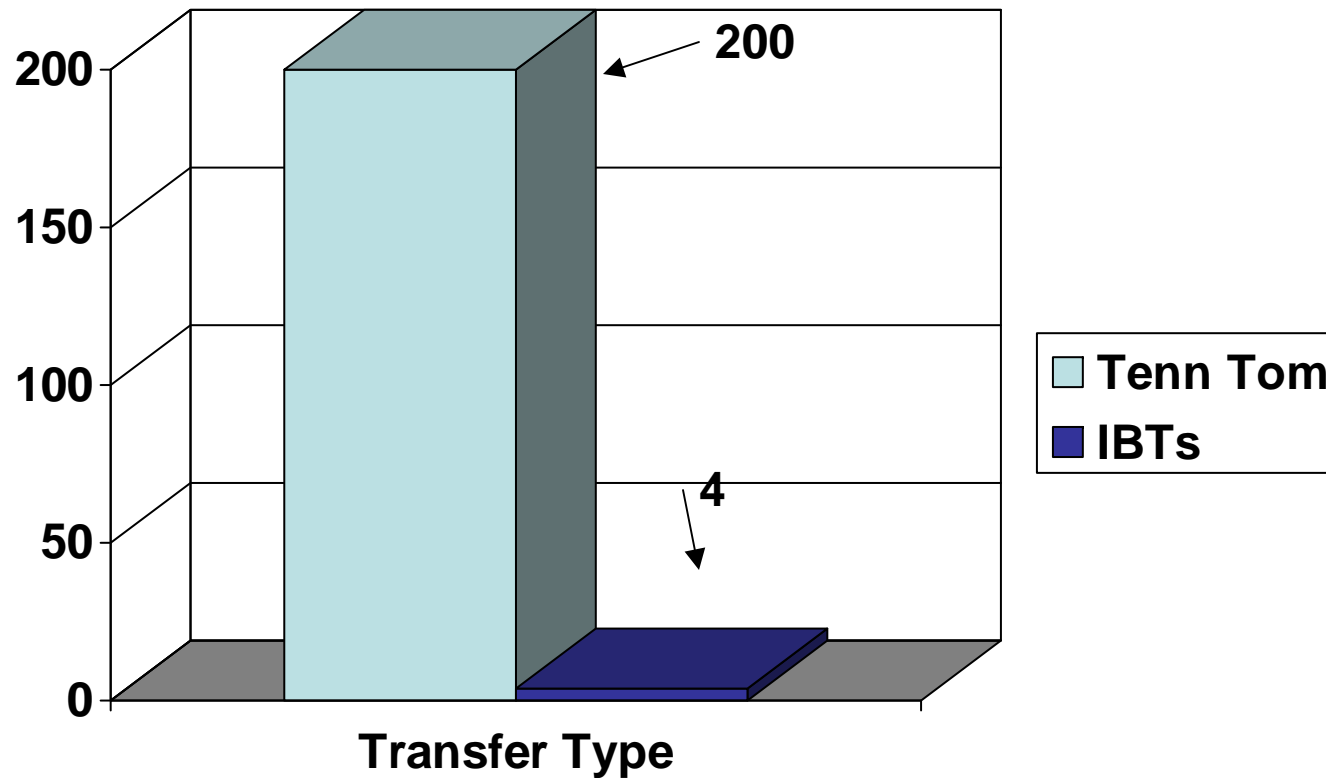
2005 ESTIMATED WATER USE

Net Water Demand (Consumptive Use) in
millions of gallons per day (mgd)



2005 ESTIMATED WATER USE

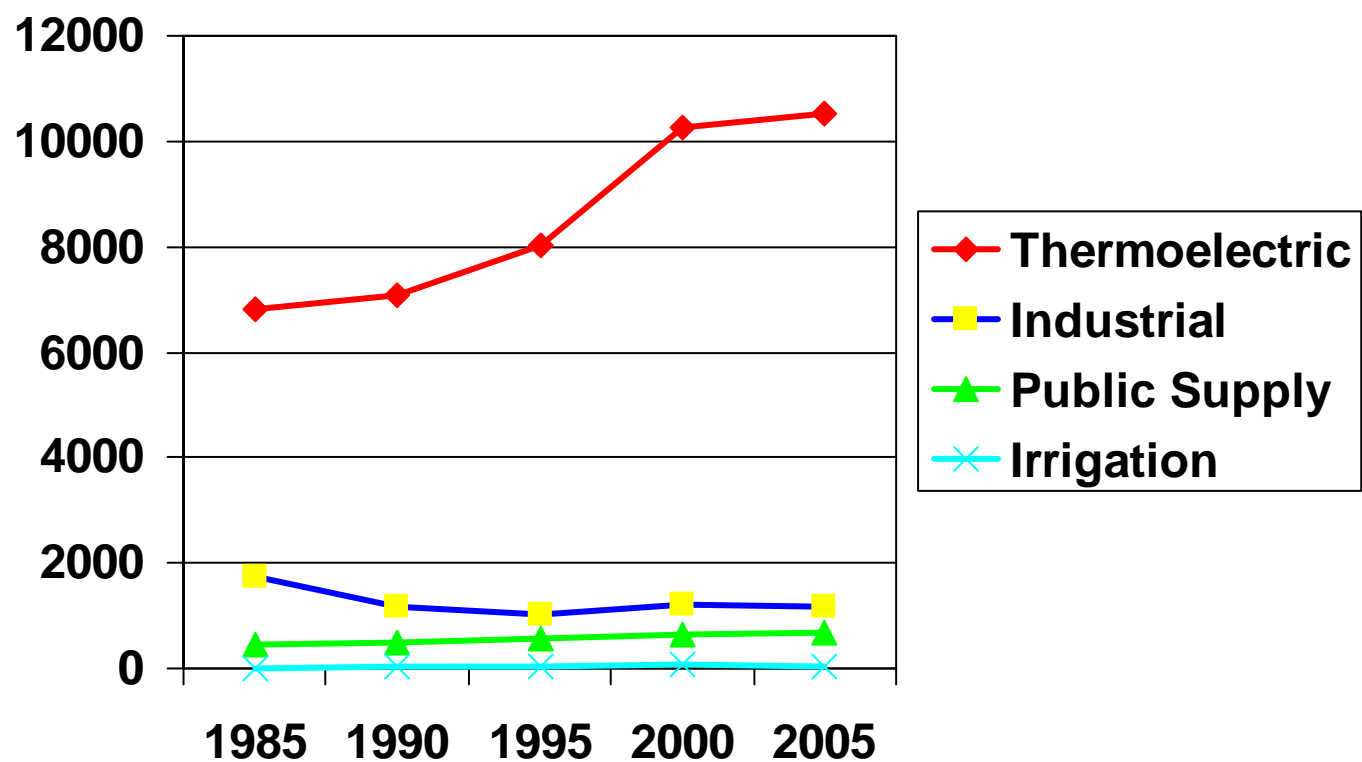
Transfers in millions of gallons per day (mgd)



WITHDRAWAL TRENDS

1985 TO 2005

(mgd)



CONSUMPTIVE USE AND TRANSFERS (mgd)

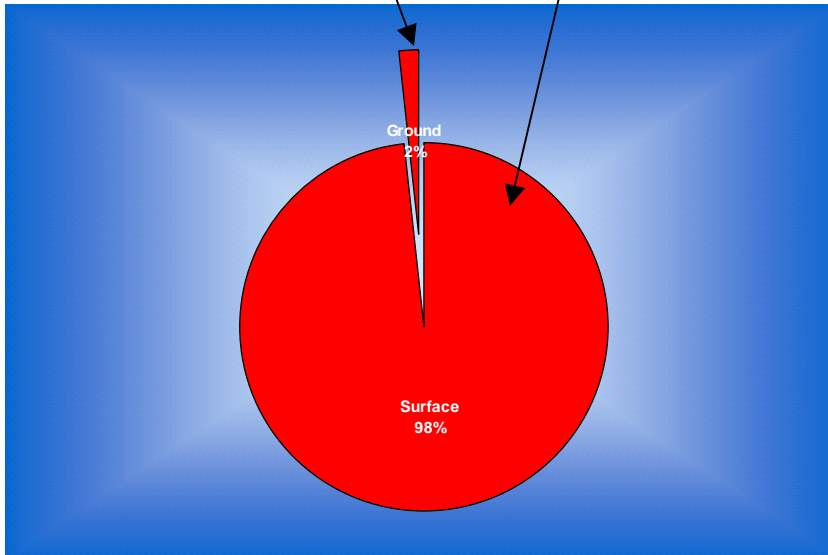
Use Type	2000	2005
Thermoelectric	32	33
Industrial	263	82
Public Supply	285	273
Irrigation	69	43
Consumptive Use Total	649	431
Tenn Tom	200	200
IBTs	8	4
Total	857	635

REDUCED INDUSTRIAL CONSUMPTIVE USE

- 2000 Consumptive Use was 263 mgd
- 2005 Consumptive Use was 82 mgd
- 153 mgd of the total reduction of 181 mgd was the result of changes in water use or water use reporting for 10 industries.

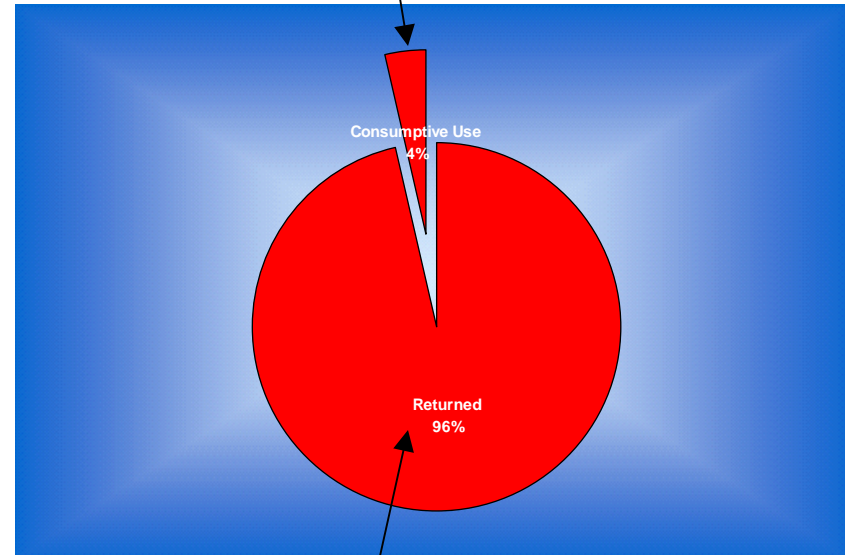
2005 SOURCE AND DISPOSITION

Ground 1.6% Surface 98.4%



2% and 98% in 2000

Consumptive Use 3.5%



Returned to the River System 96.5%

5% and 95% in 2000

2030 ESTIMATED WATER USE

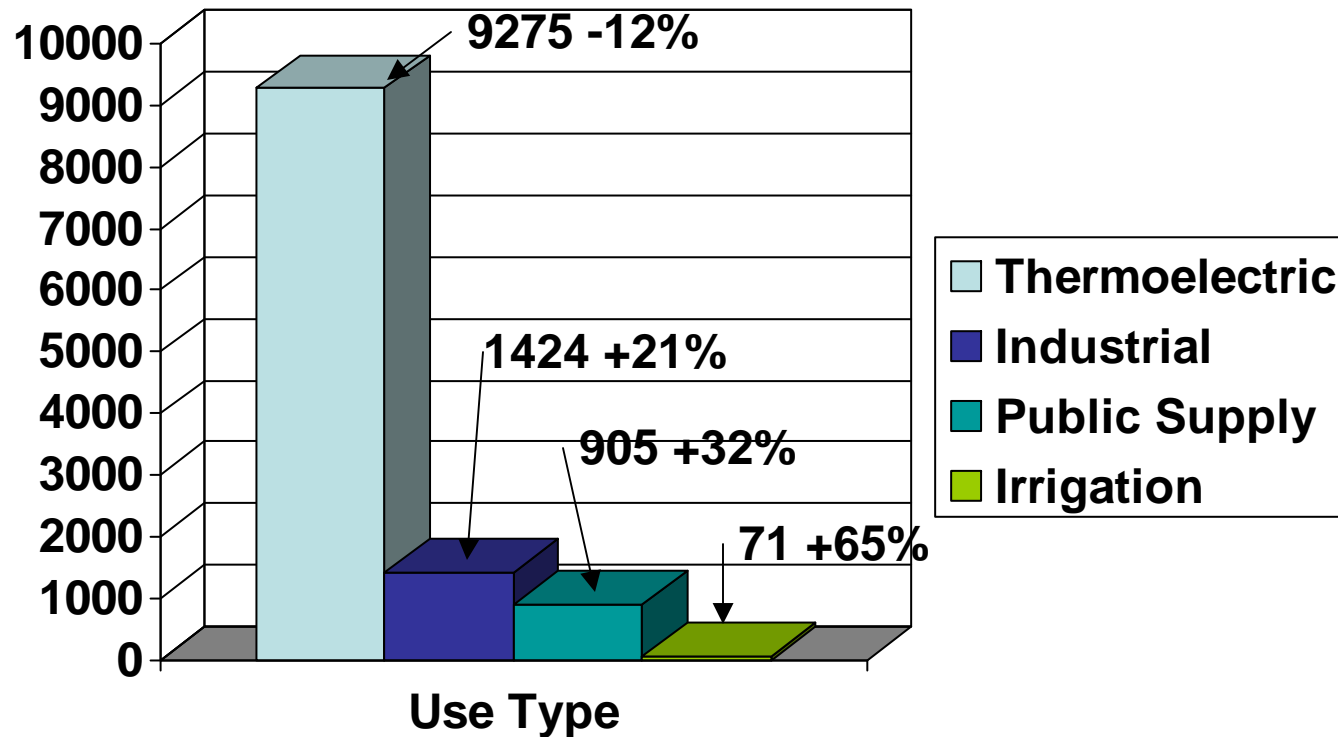
- Thermoelectric – Based on TVA's Power Supply Plan
 - Most economical generating mix considering
 - Fuel costs
 - Operating costs
 - Air quality constraints
 - Unit operating efficiency
 - Demand side management

2030 ESTIMATED WATER USE

- Industrial – Based on projections of industrial growth
- Public Supply – Based on projections of population growth
- Irrigation – Based on projections of irrigated acreage

2030 ESTIMATED WATER USE

Withdrawal in millions of gallons per day (mgd)



2030 ESTIMATED WATER USE

Withdrawal in millions of gallons per day (mgd)

Use	2005	2030	% Change
Total	12,437	11,676	-6
Thermoelectric	10,531	9275	-12
Industrial	1,179	1,424	21
Public Supply	684	905	32
Irrigation	43	71	65
Consumptive	432	750	74
Transfers	200	393	97

TAILWATERS

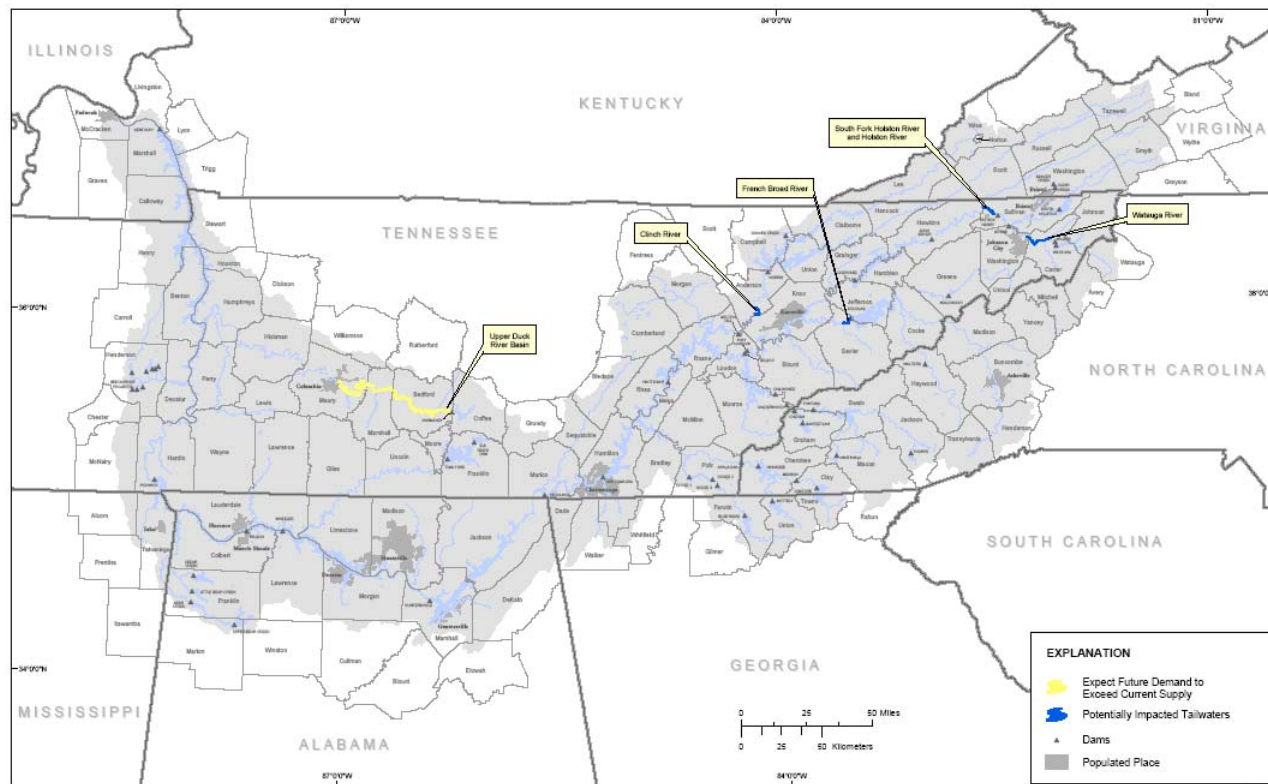


Figure 4-2: Tailwater Areas of Concern
4—9

EASTERN VALLEY

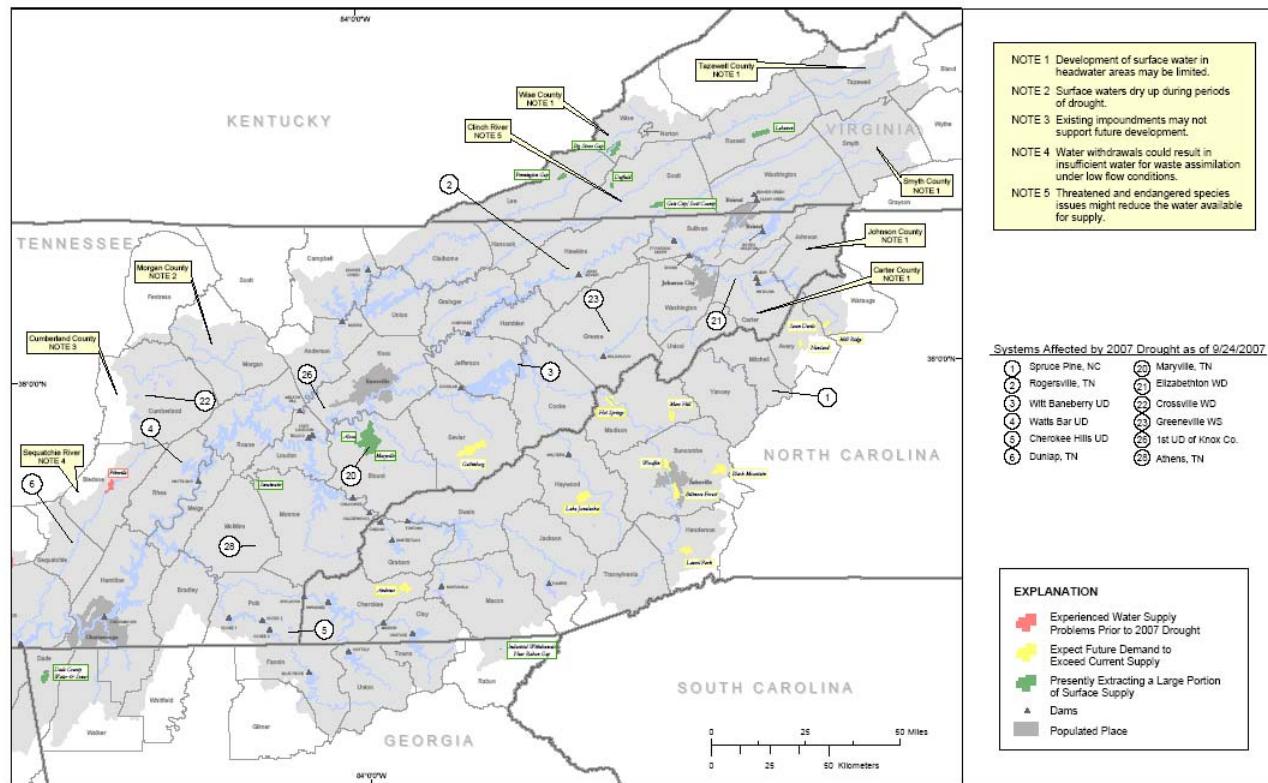


Figure S-1: Unregulated Stream Areas of Concern and Drought Affected Systems - East
S-22

WESTERN VALLEY

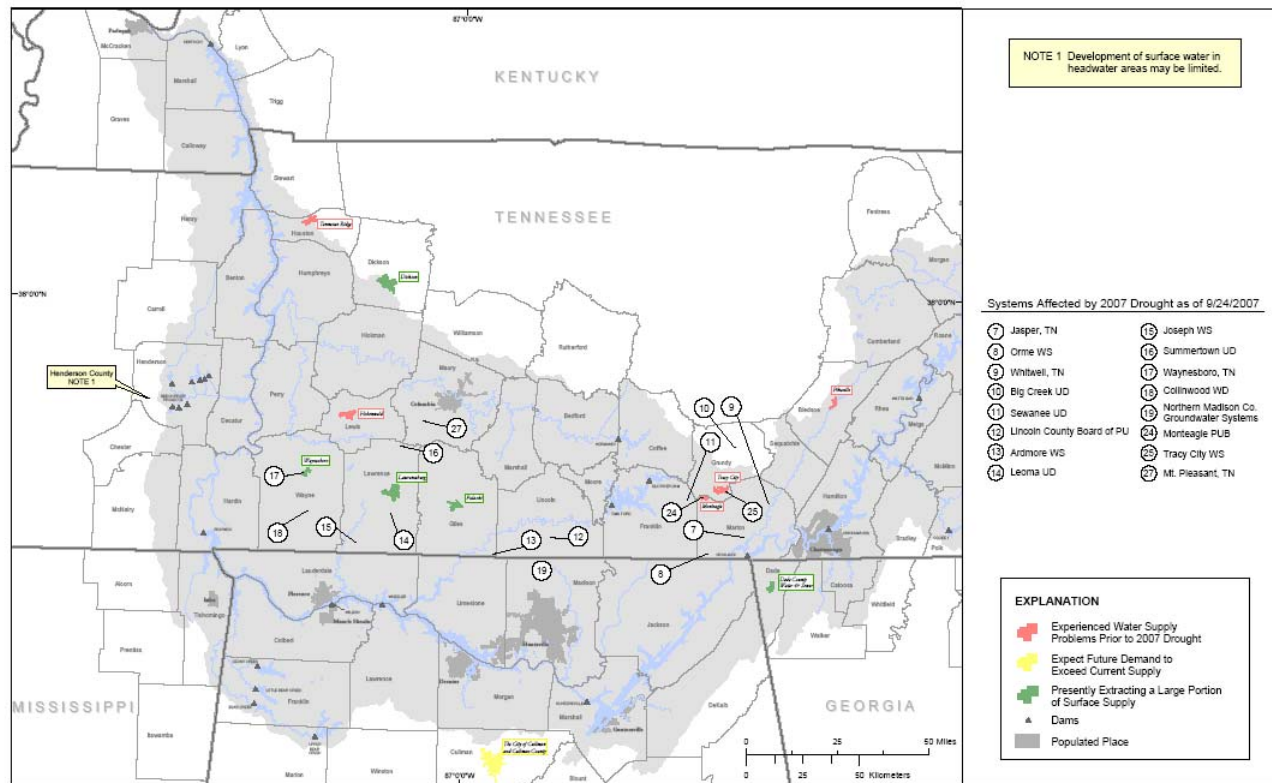
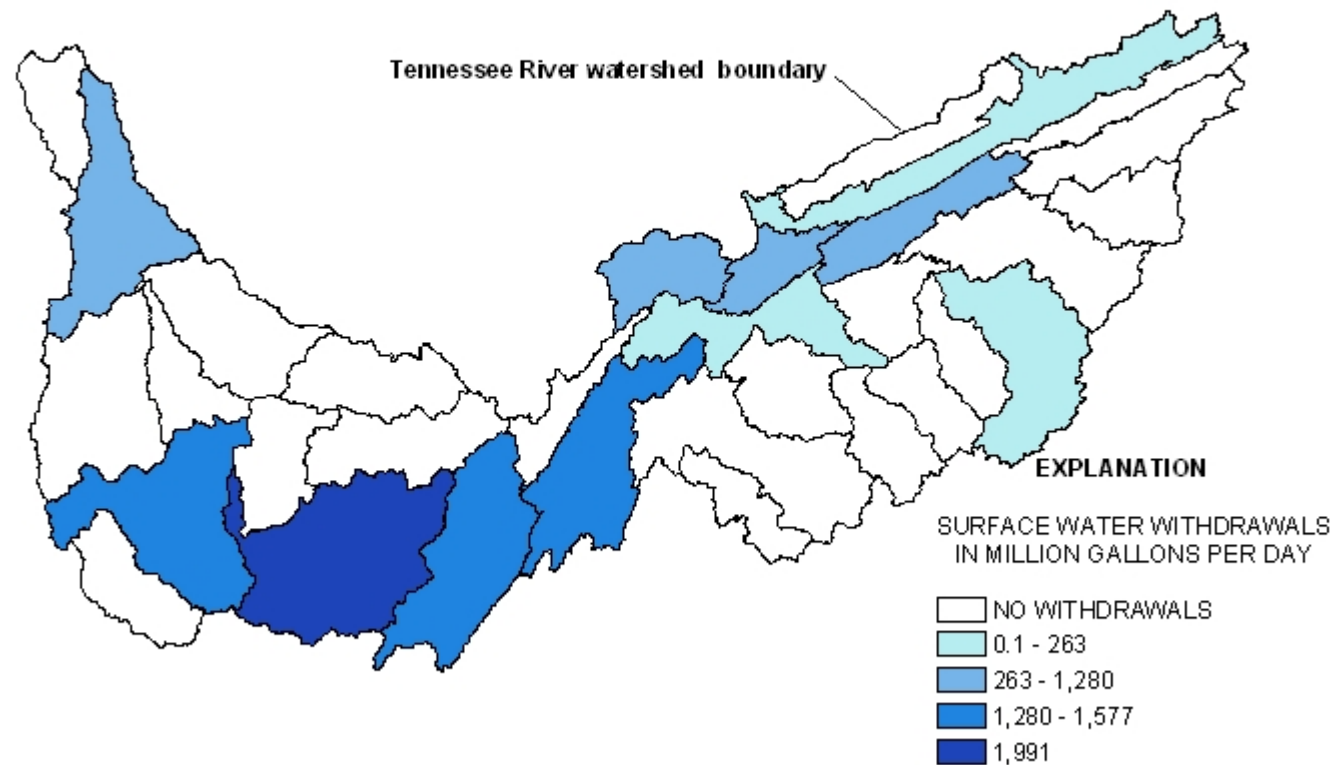


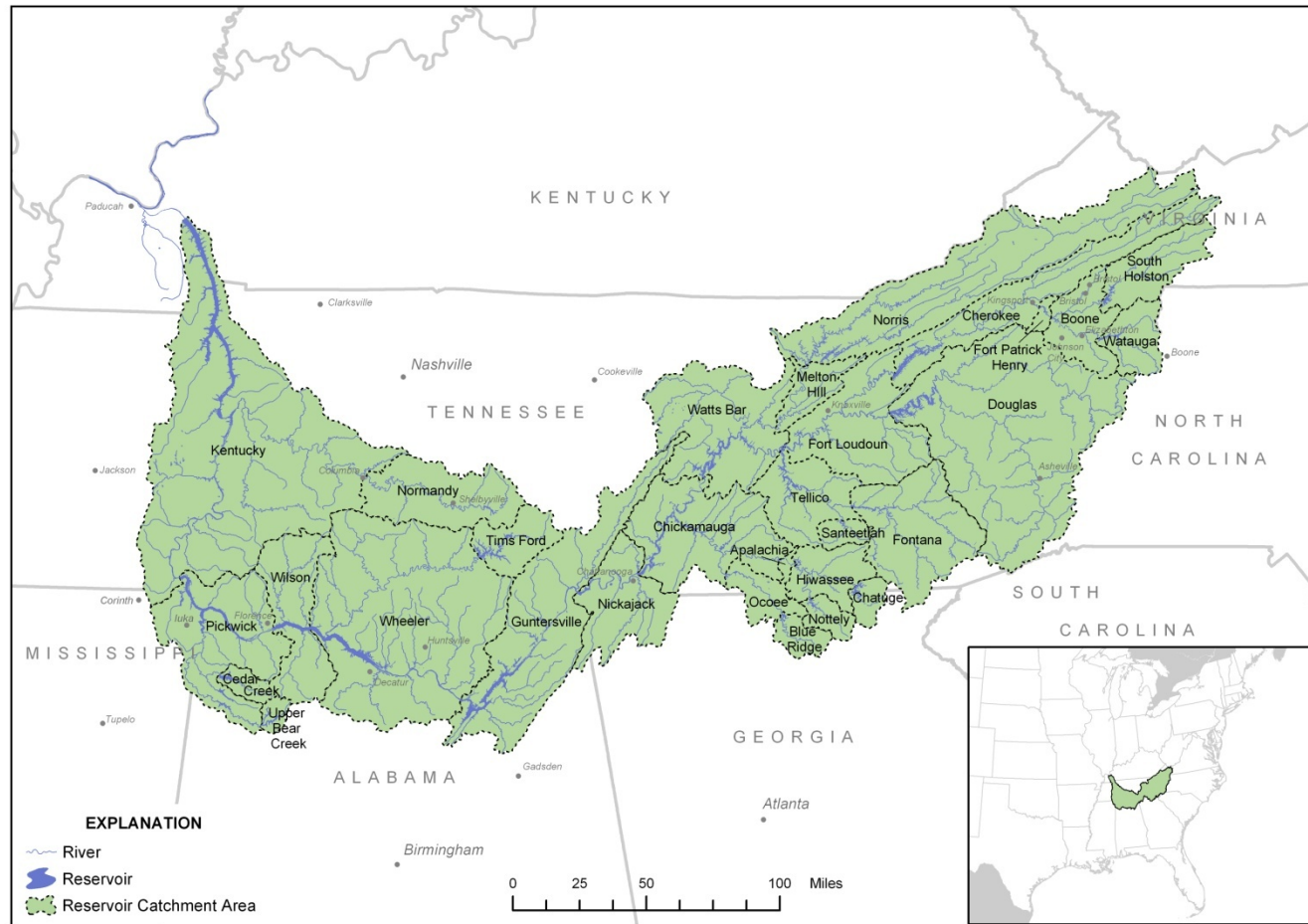
Figure 5-2: Unregulated Stream Areas of Concern and Drought Affected Systems - West
5-23

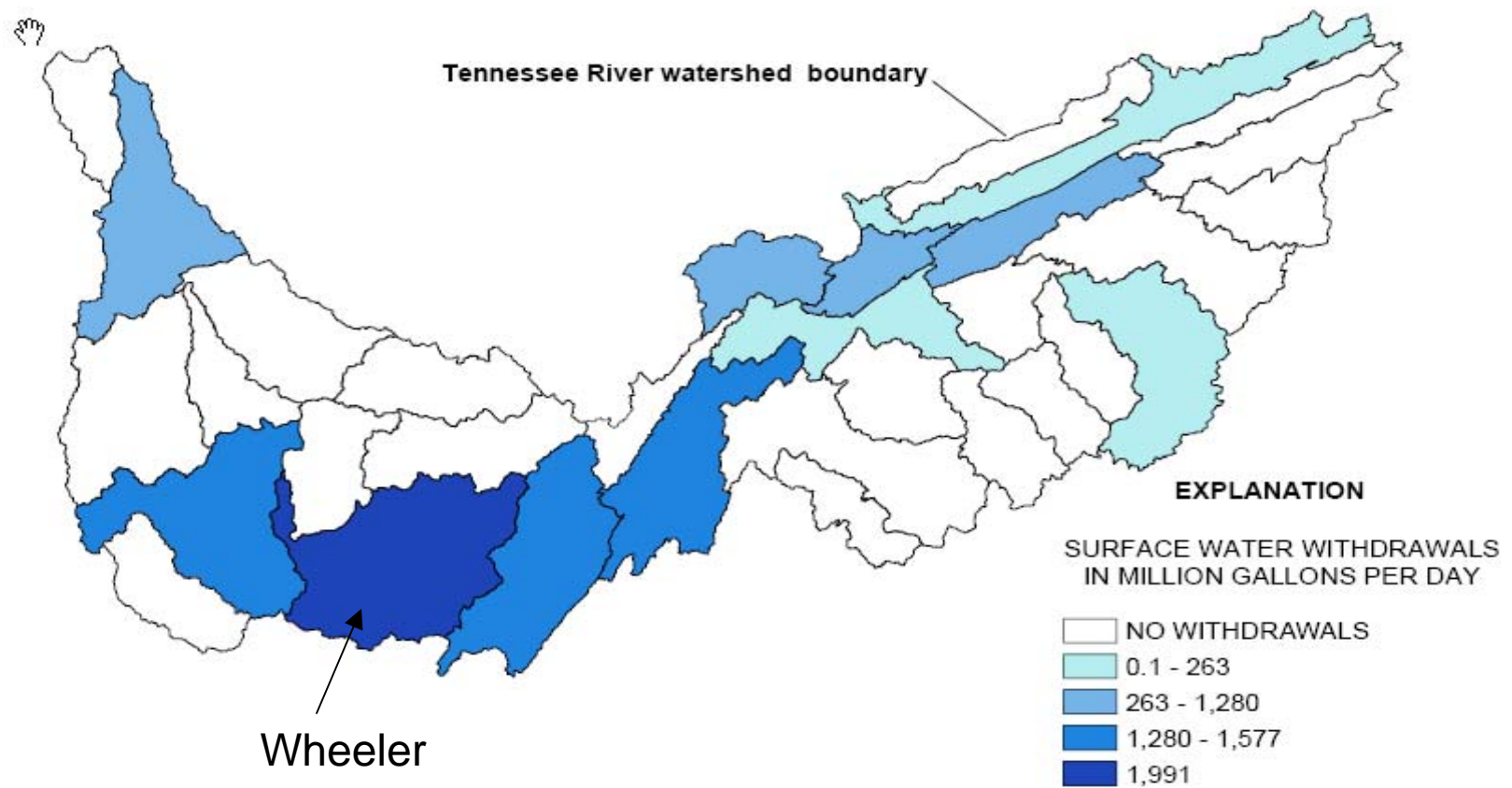
THERMOELECTRIC WITHDRAWALS



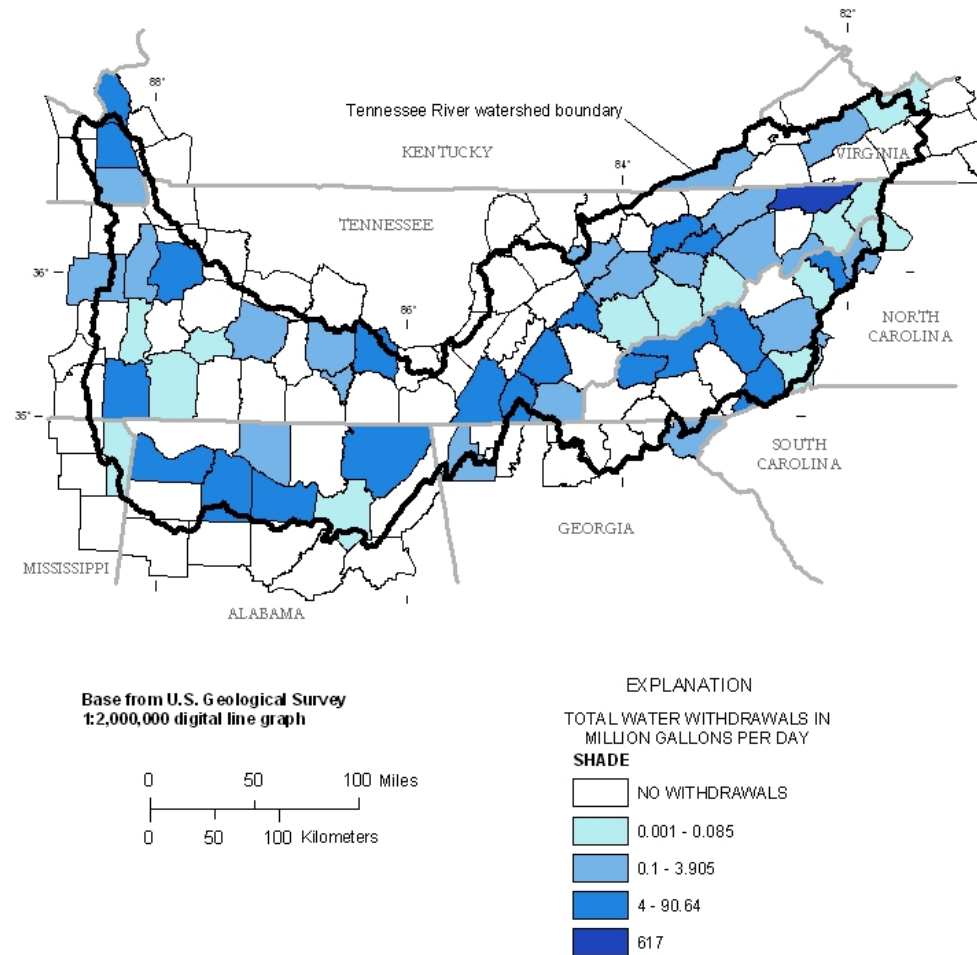
Thermoelectric Power Water Withdrawals by Hydrologic Unit in the Tennessee River Watershed in 2005.

Tennessee River



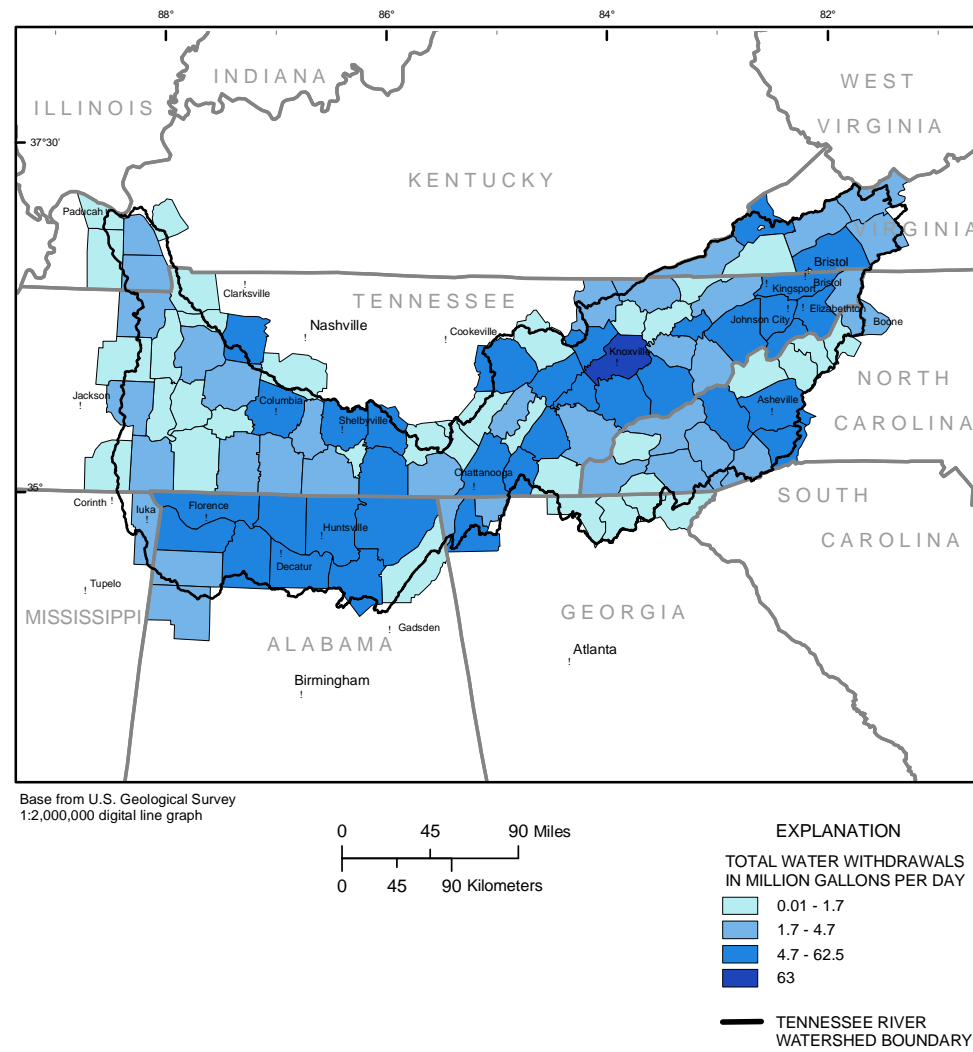


INDUSTRIAL WITHDRAWAL



Industrial Withdrawals by State and County in the Tennessee River Watershed in 2005.

PUBLIC-SUPPLY WITHDRAWALS



Public Supply Water Withdrawals by State and County in the Tennessee River Watershed in 2005.

WATER LEAVING THE WATERSHED 2000 & 2005 (mgd)

